

## **REMARKS**

These remarks and the accompanying amendments are responsive to the Office Action dated January 6, 2010 (hereinafter referred to as the "Office Action"). At the time of the last examination, Claims 1 and 3-8 were pending, of which Claims 1 and 4 are independent. The Office Action rejected Claims 1 and 3-8.

### **General Considerations**

#### **a. Remarks**

Applicants respectfully note that the remarks herein do not constitute, nor are they intended to be, an exhaustive enumeration of the patentable distinctions between any cited references and the invention, or example embodiments of which are set forth in the claims of this application. Rather, and in consideration of the fact that various factors make it impractical to enumerate all the patentable distinctions between the invention and the cited art, as well as the fact that the Applicants have broad discretion in terms of the identification and consideration of the base(s) upon which the claims distinguish over the cited references, the distinctions identified and discussed herein are presented solely by way of example. Consistent with the foregoing, the discussion herein is not intended, and should not be construed, to prejudice or foreclose contemporaneous or future consideration by the Applicants, in this case or any other, of additional or alternative distinctions between the invention and the cited references and/or the merits of additional or alternative arguments.

Moreover, Applicants note that the remarks, or a lack of remarks, set forth herein are not intended to constitute, and should not be construed as, an acquiescence on the part of the Applicants: as to the purported teachings or prior art status of the cited references; as to the characterization of the cited references advanced by the Examiner; or as to any other assertions, allegations or characterizations made by the Examiner at any time in this case. Applicants reserve the right to challenge the purported teachings and purported prior art status of the cited references at any appropriate time.

**b. Present Understanding of the References**

In connection with the prosecution of this case, as well as any related cases, the Applicants have, and/or may, discuss various aspects of the disclosure of the cited references as those references are then understood by the Applicants. Inasmuch as such discussion could, at times, reflect an incomplete or incorrect understanding of one or more of the references however, the position of the Applicants with respect to a reference is not necessarily fixed or irrevocable, and Applicants hereby reserve the right, both during and after prosecution of this case, to modify the views expressed with regard to such reference.

**Rejection Under 35 U.S.C. §103**

The Office Action rejects Claims 1 and 3-8 under 35 U.S.C. 103(a) as being unpatentable over United States patent number 2006/0245763 issued to Ishida et al. (the patent hereinafter referred to simply as "Ishida") in view of United States patent number 6,559,996 issued to Miyamoto (the patent hereinafter referred to simply as "Miyamoto"). Applicants respectfully traverse this rejection for the reasons that will now be explained.

According to the applicable statute, a claimed invention is unpatentable for obviousness if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a) (2005); *Graham v. John Deere Co.*, 383 U.S. 1, 14 (1966); MPEP 2142. Obviousness is a legal question based on underlying factual determinations including: (1) the scope and content of the prior art, including what that prior art teaches explicitly and inherently; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham*, 383 U.S. at 17-18; *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

"The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious." MPEP 2142 (2007). Analysis supporting a rejection under 35 U.S.C. §103(a) should be made explicit. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, (2007). Moreover, the Patent Office must identify a reason (such as motivation) why a person of ordinary skill in the art at the time of the invention would have combined the prior art elements in the manner claimed. *Id.* "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some

articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id. quoting In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006); *see also* MPEP 2142. A court should be wary of reasoning based on hindsight. *See Graham*, 383 U.S. at 36.

It is the initial burden of the PTO to demonstrate a *prima facie* case of obviousness. If the PTO does not set forth a *prima facie* case of obviousness, the applicant is under no obligation to submit evidence of nonobviousness. MPEP 2142 (emphasis added). Title 35 requires the analysis to examine "the subject matter as a whole" to ascertain if it "would have been obvious at the time the invention was made." 35 U.S.C. § 103(a) (emphasis added).

Embodiments of the pending claims relate to an optical differential phase shift keyed RZ transmitter. The optical differential phase shift keyed RZ transmitter includes a differential encoder having first and second outputs, the first and second outputs being of opposite polarity to one another. The differential encoder differentially encodes data to produce first and second data streams of opposite polarity. A first RZ converter is connected to the first output of the differential encoder and a second RZ converter is connected to the second output of the differential encoder. The first and second RZ converters convert the first and second data streams to RZ signal format. A first RZ driver is connected to an output of the first RZ converter and a second RZ driver is connected to an output of the second RZ converter. The first RZ driver amplifies a first of the data streams to generate a first RZ driven data stream after the first data stream has been converted to the RZ signal format, and the second RZ driver amplifies a second of the data streams to generate a second RZ driven data stream after the second data stream has been converted to the RZ signal format. The optical differential phase shift keyed RZ transmitter also includes a dual electrode Mach Zehnder modulator to which an unmodulated coherent light source is coupled. The dual electrode Mach Zehnder modulator phase modulates a coherent light signal from the coherent light source and outputs as a differential phase shift keyed RZ optical signal. The first and second electrodes of the Mach Zehnder modulator are driven sequentially by the first RZ driven data stream and the second RZ driven data stream, respectively.

Regarding pending independent claims 1 and 4, the Office Action alleges that Ishida teaches all the elements of these claims except for the first and second RZ drivers. Rather, the Office Action turns to Miyamoto to show these elements. However, Applicants respectfully note that the pending claims teach phase shift keyed data format. Miyamoto, on the other hand, does

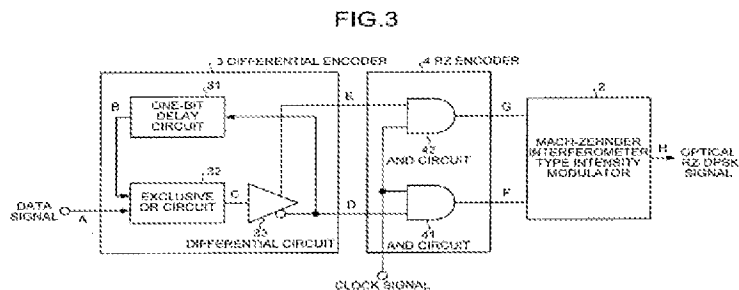
not relate to the production of such a format. Instead, Miyamoto relates to amplitude key shifted format (see Figure 3 of Miyamoto). The two types of formats are fundamentally different: while an amplitude shift keyed format encodes digital ones by transmitting light and digital zeros by the absence of light, phase shifted keyed formats transmit light for both ones and zeros but distinguish between the two by the phase of the transmitted light (see Figure 3 of the present application)

Miyamoto therefore does not provide an apparatus or a method for transmitting the claimed data format. In contrast, figure 3 of Miyamoto clearly shows that zeros are encoded by suppressing the optical signal. The fact that successive ones are arranged to have opposite phase does not make this a phase shift keyed format. Figures 14 and 23 of Miyamoto also make it clear that it is an amplitude shift keyed format that is envisaged, as does optical output spectrum shown in Figure 5.

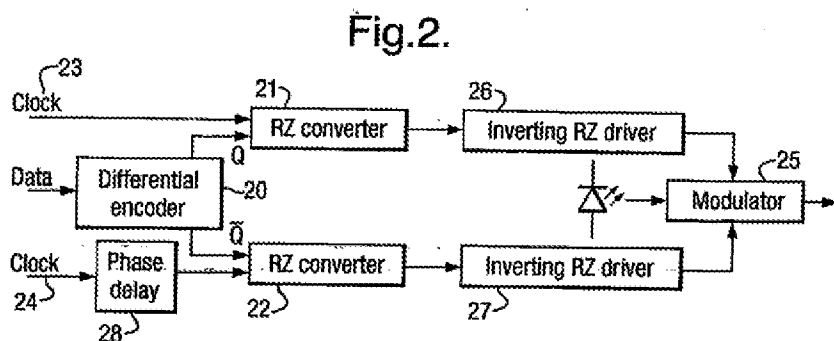
Amplitude shift and phase shift keyed formats are fundamentally different in terms of the modulation applied to the signal. As such, it would not be obvious to apply transmitters or methods designed to create amplitude shift keyed formats in the context of phase shift keyed formats of the type required by the pending claims. Accordingly, one of skill in the art would not be motivated to use the teachings of Miyamoto to produce the elements of the pending claims as the system of Miyamoto is not configured to work with system of the pending claims.

Therefore, there is no rational reason for one of skill in the art to combine the teachings of Miyamoto with the teachings of Ishida to produce the system and methods of the pending claims. That is, the Office Action has shown no rational underpinning as to why one of skill in the art when reading the Miyamoto and Ishida references would think to combine the system of Miyamoto with the system of Ishida as the two systems are not configured to work together.

Applicants also specifically traverse the rejection of claims 3 and 6. These claims have been rejected by Figure 3 of Ishida. However, as shown below, Figure 3 and its accompanying text at best show a clock signal that is fed to the RZ encoder 4. Nowhere is there any mention in these portions of Ishida of a phase delay being added to the clock.



This is far different from what is recited in claims 3 and 6. As shown below in Figure 2 of the pending application, claims 3 and 6 recite a phase delay, such as phase delay 28, as part of a clock signal being fed to one of the RZ converters.



Accordingly, Applicants respectfully submit that the cited art fails, either singularly or in combination, to teach or disclose all of the elements of the amended claims. In addition, there is no rational reason to combine the cited art as discussed above. Thus, the Office Action has not shown a *prima facie* case of obviousness and the Applicants respectfully request the rejection of claims 1 and 4, along with their respective dependent claims, be withdrawn.

### **CONCLUSION**

In view of the foregoing, Applicants believe the claims as amended are in allowable form and that every issue raised by the Office Action has been addressed. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 23-3178: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefore and charge any additional fees that may be required to Deposit Account No. 23-3178.

Dated this 6<sup>th</sup> day of July, 2010.

Respectfully submitted,

/Adrian J. Lee, Reg.# 42785/

Adrian J. Lee  
Registration No. 42,785  
Attorney for Applicants  
Customer No. 022913